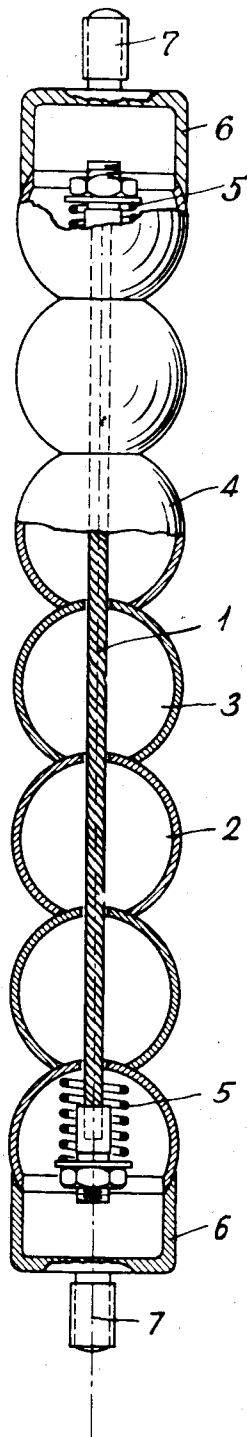


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FLEXIBLE HIGH VOLTAGE LINE

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INVENTORS
EMIL ZITTRICH
KARL WENZEL
BY *J. S. Hoover*
ATTORNEY

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FLEXIBLE HIGH VOLTAGE LINE

Emil Zittich and Karl Wenzel, Berlin, Germany,
assignors to Telefunken Gesellschaft für Draht-
lose Telegraphie m. b. H., Berlin, Germany, a
corporation of Germany

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This invention relates to a flexible and corona free line for very high voltages which may be used, for instances, in movable apparatus to which the highest voltages are to be applied, more especially for high-frequency.

A feature of the invention is a flexible high voltage line having metal balls placed in a row over a litz wire with bores of the balls that are widened out.

The use of ordinary flexible litz wires, or the like, for conducting very high voltages (for instance, 50 kv), is practically impossible especially in case of higher frequencies, since the lines reveal an extremely high corona effect in view of the fact that the amperage that can be conducted is limited in case of a diameter that is most favorable with respect to flexibility. In accordance with the novelty, a line is used for conducting very high voltages which is characterized in that metal balls are placed in a row on a flexible litz wire, whereby the bores of said metal balls are widened out on one side, respectively, while the balls are pressed against each other by a spring force.

An example of construction according to the novel feature is shown in the drawing.

Character 1 designates the flexible litz wire consisting of conducting or non-conducting material and preferably of a wire rope to provide sufficient mechanical strength. This litz wire carries a row of metal balls (shown as hollow balls in the figure) 2, 3, 4 etc. As can be readily seen from the figure, always one of the two bores is widened out. Thus, the ball 3, for instance, has an upper bore whose diameter is just sufficient for pulling through the litz wire, while the lower bore is widened out to more than twice the size, so that the bore rests on the upper side of the metal ball 2, thus making contact with the latter on a surface of considerable size. The end of the litz wire 1 has a helical spring 5 fastened thereto, pressing all balls against each other, so that no open gaps can appear between the individual balls when bending the line, and the balls rest upon each other always with the same size of the contact surface. The lower end ball has an extension 6 provided with a connection screw or connection terminal 7 with which the line can be connected. The upper end of the line may be constructed identically with the lower end, and likewise provided with a helical spring.

The line is equally well suited for conducting low frequencies or high frequencies. In case of high frequencies it will be of advantage to choose

the bores as wide as possible in order that the current which always flows over the outside of the balls has at each place a large conducting surface available.

As furthermore seen from the figure, the widened bores are chamfered such that they fit accurately on the surface of the following ball so that always a uniform electric contact is assured.

Owing to the large conducting surfaces at all places of the line and due to the enlarged bores at the places of contact between the balls, considerable amperages can be conducted across the line.

What is claimed is:

1. A flexible high voltage line comprising a plurality of hollow metallic spheres, two apertures in each of said spheres, said metallic spheres placed in a row, one of each of said apertures of certain of the intermediate spheres being larger than the other, the larger aperture being chamfered to fit the surface of an adjacent sphere to insure a uniform electrical contact thereto, the larger aperture of the intermediate spheres located on the outside surface of an adjacent sphere near its smaller aperture, a retaining member passing through said apertures, and compression means enclosed within at least one of said spheres and cooperating with said retaining member whereby the surfaces of all metallic spheres are bound and electrically connected together.

2. A flexible high voltage line comprising a plurality of hollow metallic spheres, two apertures in each of said spheres, said metallic spheres placed in a row, one of each of said apertures of certain of the intermediate spheres being larger than the other, the larger aperture being chamfered to fit the surface of an adjacent sphere to insure a uniform electrical contact thereto, the larger aperture of the intermediate spheres located on the outside surface of an adjacent sphere near its smaller aperture, a retaining member passing through said apertures, and compression means comprising a helical spring member enclosed within at least one of said spheres and cooperating with said retaining member whereby the surfaces of all metallic spheres are bound and electrically connected together.

3. A flexible high voltage line comprising a plurality of hollow metallic spheres, two apertures in each of said spheres, said metallic spheres placed in a row, one of each of said apertures of certain of the intermediate spheres be-

ing larger than the other, the larger aperture being chamfered to fit the surface of an adjacent sphere to insure a uniform electrical contact thereto, the larger aperture of the intermediate spheres located on the outside surface of an adjacent sphere near its smaller aperture, a retaining member passing through said apertures, and compression means comprising a helical spring member enclosed within at least one of said spheres and cooperating with said retaining member whereby the surfaces of all metallic spheres are bound and electrically connected together, and an extension member covering over said spring member, said extension member having a connection terminal secured thereto.

4. A flexible high voltage line comprising a plurality of hollow metallic spheres, two apertures in each of said spheres, said metallic spheres placed in a row, one of each of said apertures of certain of the intermediate spheres being larger than the other, the large aperture being chamfered to fit the surface of an adjacent sphere to insure a uniform electrical contact thereto, the larger aperture of the intermediate spheres located on the outside surface of an adjacent sphere near its smaller aperture, a retaining member passing through said apertures, and compression means comprising a spring member located at one end thereof and within the confines of at least one of said metallic spheres, whereby the surfaces of said metallic spheres are bound and electrically connected together, and an extension member covering over said spring member.

5. A flexible high voltage line comprising a plurality of hollow metallic spheres, two apertures in each of said spheres, said metallic spheres placed in a row, one of each of said apertures of certain of the intermediate spheres being larger than the other, the larger aperture being chamfered to fit the surface of an adjacent sphere to insure a uniform electrical contact thereto, the larger aperture of the intermediate spheres located on the outside surface of an adjacent sphere near its smaller aperture, a retaining member passing through said apertures, and

compression means located at both ends thereof and within the confines of the end metallic spheres whereby the surfaces of said metallic spheres are bound and electrically connected together, and an extension member covering over each end of said retaining member.

6. A flexible high voltage line comprising a plurality of hollow metallic spheres, two apertures in each of said spheres, said metallic spheres placed in a row, one of each of said apertures of certain of the intermediate spheres being larger than the other, the larger aperture being chamfered to fit the surface of an adjacent sphere to insure a uniform electrical contact thereto, the larger aperture of the intermediate spheres located on the outside surface of an adjacent sphere near its smaller aperture, a retaining member passing through said apertures, and compression means located at both ends thereof and within the confines of the end metallic spheres whereby the surfaces are bound and electrically connected together, an extension member covering over each end of said retaining member, and a connection terminal secured thereto.

7. A flexible high voltage line comprising a plurality of hollow metallic spheres, two apertures in each of said spheres, said metallic spheres placed in a row, one of each of said apertures of certain of the intermediate spheres being larger than the other, the larger aperture being chamfered to fit the surface of an adjacent sphere to insure a uniform electrical contact thereto, the larger aperture of the intermediate spheres located on the outside surface of an adjacent sphere near its smaller aperture, a flexible metallic rope forming a retaining member which passes through said apertures, and compression means enclosed within at least one of said spheres and cooperating with said retaining member whereby the surfaces of all metallic spheres are bound and electrically connected together.

EMIL ZITTRICH.
KARL WENZEL.